IN THE CLAIMS:

Please ADD new claims 22-25, as follows. For the Examiner's convenience, all claims currently pending in this application have been reproduced below:

1. (Original) An electrode structure serving as a building component of an electron optical system array having a plurality of electron lenses comprising:

a substrate having a plurality of apertures for transmitting a plurality of charged-particle beams; and

a plurality of electrodes extending from side surfaces of the plurality of apertures to peripheries of the plurality of apertures,

wherein at least a surface of said substrate is insulated.

2. (Original) The structure according to claim 1, wherein the surface of said substrate has an insulating film.

3. (Original) The structure according to claim 1, wherein electrodes formed in at least two apertures are electrically connected.

4. (Original) The structure according to claim 1, wherein

the plurality of apertures are arrayed, and

electrodes formed in apertures of each column are electrically connected.

5. (Original) The structure according to claim 1, wherein the electrode structure further comprises an alignment position for aligning the electrode structure with another electrode structure.

6. (Original) The structure according to claim 1, wherein said substrate includes a silicon substrate covered with an insulating film after the plurality of apertures are formed.

7. (Original) An electron optical system array having a plurality of electron lenses, comprising a plurality of electrode structures which are arranged along paths of a plurality of charged-particle beams and have pluralities of apertures on the paths of the plurality of charged-particle beams,

wherein at least one of said plurality of electrode structures includes

a substrate having a plurality of apertures for transmitting the plurality of charged-particle beams, and

a plurality of electrodes extending from side surfaces of the plurality of apertures to peripheries of the plurality of apertures, and

at least a surface of said substrate is insulated.

8. (Original) The array according to claim 7, wherein the surface of said substrate has an insulating film.

9. (Original) The array according to claim 7, wherein electrodes formed in at least two apertures of said substrate are electrically connected.

10. (Original) The array according to claim 7, wherein

the plurality of apertures of said plurality of electrode structures are arrayed, and

electrodes formed in each column of said substrate are electrically connected.

11. (Original) The array according to claim 7, wherein said plurality of electrode structures include a shield electrode structure.

12. (Original) The array according to claim 7, wherein

each of said plurality of electrode structures comprises a membrane portion which has the plurality of apertures and a support portion which supports the membrane portion, and

the electron optical system array further comprises a spacer interposed between support portions of adjacent electrode structures to define a distance between the support portions.

13. (Original) The array according to claim 7, wherein

each of said plurality of electrode structures comprises a membrane portion in which the plurality of apertures are formed and a support portion which supports the membrane portion, and

the electron optical system array further comprises a spacer interposed between membrane portions of adjacent electrode structures to define a distance between the membrane portions.

14. (Original) The array according to claim 7, wherein

each of said plurality of electrode structures comprises a membrane portion which has the plurality of apertures and a support portion which supports the membrane portion, and

the electron optical system array further comprises:

a first spacer interposed between support portions of adjacent electrode structures to define a distance between the support portions; and

a second spacer interposed between membrane portions of adjacent electrode structures to define a distance between the membrane portions.

15. (Original) A method of manufacturing an electrode structure serving as a building component of an electron optical system having a plurality of electron lenses, comprising the steps of:

forming in a substrate a plurality of apertures for transmitting a plurality of charged-particle beams;

covering the substrate having the plurality of apertures with an insulating film; and

forming, in the substrate covered with the insulating film, a plurality of electrodes extending from side surfaces of the plurality of apertures to peripheries of the plurality of apertures.

16. (Original) The method according to claim 15, wherein

the substrate includes a silicon substrate, and

in the step of forming a plurality of apertures, a plurality of apertures are formed in the silicon substrate by plasma dry etching.

17. (Original) A charged-particle beam exposure apparatus comprising:

a charged-particle beam source for emitting a charged-particle beam;

an electron optical system array which has a plurality of electron lenses and forms a plurality of intermediate images of said charged-particle beam source by the plurality of electron lenses; and

a projection electron optical system for projecting on a substrate the plurality of intermediate images formed by said electron optical system array,

wherein said electron optical system array includes a plurality of electrode structures which are arranged along paths of a plurality of charged-particle beams concerning the plurality of intermediate images and have pluralities of apertures on the paths of the plurality of charged-particle beams,

at least one of said plurality of electrode structures includes

a substrate having a plurality of apertures for transmitting the plurality of charged-particle beams, and

a plurality of electrodes extending from side surfaces of the plurality of apertures to peripheries of the plurality of apertures, and

at least a surface of said substrate is insulated.

18. (Original) A device manufacturing method comprising the steps of:

installing a plurality of semiconductor manufacturing apparatuses including a charged-particle beam exposure apparatus in a factory; and

manufacturing a semiconductor device by using the plurality of semiconductor manufacturing apparatuses,

wherein the charged-particle beam exposure apparatus includes

a charged-particle beam source for emitting a charged-particle beam,

an electron optical system array which has a plurality of electron lenses and forms a plurality of intermediate images of the charged-particle beam source by the plurality of electron lenses, and

a projection electron optical system for projecting on a substrate the plurality of intermediate images formed by the electron optical system array,

the electron optical system array includes a plurality of electrode structures which are arranged along paths of a plurality of charged-particle beams concerning the plurality of intermediate images and have pluralities of apertures on the paths of the plurality of charged-particle beams,

at least one of the plurality of electrode structures includes

a substrate having a plurality of apertures for transmitting the plurality of charged-particle beams, and

a plurality of electrodes extending from side surfaces of the plurality of apertures to peripheries of the plurality of apertures, and

at least a surface of the substrate is insulated.

19. (Original) The method according to claim 18, further comprising the steps of:

connecting the plurality of semiconductor manufacturing apparatuses by a local area network;

connecting the local area network to an external network of the factory;

acquiring information about the charged-particle beam exposure apparatus from a database on the external network by using the local area network and the external network; and

controlling the charged-particle beam exposure apparatus on the basis of the acquired information.

20. (Original) A semiconductor manufacturing factory comprising:

a plurality of semiconductor manufacturing apparatuses including a charged-particle beam exposure apparatus;

a local area network for connecting said plurality of semiconductor manufacturing apparatuses; and

a gateway for connecting the local area network to an external network of said semiconductor manufacturing factory,

wherein said charged-particle beam exposure apparatus includes

a charged-particle beam source for emitting a charged-particle beam,

an electron optical system array which has a plurality of electron lenses and forms a plurality of intermediate images of said charged-particle beam source by the plurality of electron lenses, and

a projection electron optical system for projecting on a substrate the plurality of intermediate images formed by said electron optical system array,

said electron optical system array includes a plurality of electrode structures which are arranged along paths of a plurality of charged-particle beams concerning the plurality of intermediate images and have pluralities of apertures on the paths of the plurality of charged-particle beams,

at least one of said plurality of electrode structures includes

a substrate having a plurality of apertures for transmitting the plurality of charged-particle beams, and

a plurality of electrodes extending from side surfaces of the plurality of apertures to peripheries of the plurality of apertures, and

at least a surface of said substrate is insulated.

21. (Original) A maintenance method for a charged-particle beam exposure apparatus, comprising the steps of:

preparing a database for strong information about maintenance of the charged-particle beam exposure apparatus on an external network of a factory where the charged-particle beam exposure apparatus is installed;

connecting the charged-particle beam exposure apparatus to a local area network in the factory; and

maintaining the charged-particle beam exposure apparatus on the basis of the information stored in the database by using the external network and the local area network,

wherein the charged-particle beam exposure apparatus includes

a charged-particle beam source for emitting a charged-particle beam,

an electron optical system array which as a plurality of electron lenses and forms a plurality of intermediate images of the charged-particle beam source by the plurality of electron lenses, and

a projection electron optical system for projecting on a substrate the plurality of intermediate images formed by the electron optical system array,

the electron optical system array includes a plurality of electrode structures which are arranged along paths of a plurality of charged-particle beams concerning the plurality of intermediate images and have plurality of apertures on the paths of the plurality of charged-particle beams,

at least one of the plurality of electrode structures includes

a substrate having a plurality of apertures for transmitting the plurality of charged-particle beams, and

a plurality of electrodes extending from side surfaces of the plurality of apertures to peripheries of the plurality of apertures, and

at least a surface of the substrate is insulated.

22. (New) An electrode plate which controls a charged-particle beam, the electrode plate comprising:

a substrate having an aperture;

an insulating layer arranged to coat a surface of the substrate and a side surface of the aperture of the substrate; and

an electrode layer arranged to coat the insulating layer,

wherein the surface of the substrate comprises a portion coated with the insulating layer but not coated with the electrode layer.

23. (New) The electrode plate according to claim 22, wherein the substrate comprises silicon, the insulating layer comprises silicon oxide, and the electrode layer comprises gold.

24. (New) A charged-particle beam exposure apparatus, comprising:

a charged-particle beam source;

an electrode plate arranged to control a charged-particle beam, the electrode plate comprising a substrate having an aperture, an insulating layer arranged to coat a surface of the substrate and a side surface of the aperture of the substrate, and an electrode layer arranged to coat the insulating layer, wherein the surface of the substrate comprises a portion coated with the insulating layer but not coated with the electrode layer; and

a stage arranged to support a sample to be patterned with the charged-particle beam controlled by the electrode plate.

25. (New) A device manufacturing method comprising:

patterning a sample with the charged-particle beam exposure apparatus defined in claim 24; and

developing the patterned sample.